REMARKS

In the present Amendment, claim 6 has been amended to be directed to a flue gas NO_x removal apparatus and to recite that each honeycomb NO_x removal catalyst has gas conduits including an aperture for feeding an exhaust gas from an inlet to an outlet of each conduit and performing NO_x removal on the sidewalls of the conduit, the gas conduits constituting the plurality of the NO_x removal catalyst layers each having approximately the same aperture size. Support is found, for example, at page 11, lines 6-11 and Figure 1 of the specification. Claims 7-10 have been amended consistent to the amendment to claim 6. No new matter has been added, and entry of the Amendment is respectfully requested.

Claims 6-10 were rejected under 35 U.S.C. § 112, second paragraph, as lacking manipulative (i.e.,…ing) steps which define the claimed method.

Claims 6-10 have been amended to be directed to a flue gas NO_x removal apparatus and all of the limitations are structural limitations which relate to the apparatus. Withdrawal of the §112 rejection is respectfully requested.

Claims 6-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 3,785,781 to Hervert et al, further in view of U.S. Patent 4,407,785 to Pfefferle.

This rejection should be withdrawn because Hervert et al and Pfefferle do not disclose or render obvious the present invention, either alone or in combination.

Fig. 3 of Hervert et al was cited as disclosing an apparatus including catalytically active honeycombs 50, 51 and 52 with *varying pore sizes*, where the length of each honeycomb is defined by the length along which the fluid maintains turbulent flow (i.e., an initial square velocity profile). At the point where the velocity profile becomes parabolic and the boundary

layer becomes stagnant (laminar flow), a second honeycomb structure with a different pore structure is used to reestablish turbulent flow.

Claim 6 has been amended to recite that the gas conduits constituting the plurality of the NO_x removal catalyst layers each having *approximately the same aperture size.* In contrast, the honeycombs 50, 51 and 52 of Hervert et al have different pores sizes.

Accordingly, the claimed apparatus distinguishes over the apparatus of Fig. 3 of Hervert et al.

The Examiner relied on Pfefferle as disclosing a multi-stage gas catalyst including spaces between the catalyst layers so as to allow gas to commingle with gas from other flowthrough paths and so as to maintain a turbulent state and maintain a high mass transfer rate. The Examiner considered that it would have been an obvious expedient to include the spaces of Pfefferle in the apparatus of Fig. 3 of Hervert et al so as to maintain turbulent flow.

However, the apparatus of Fig. 3 of Hervert et al already accomplishes this result by varying the pore size among elements 50, 51 and 52, such that there is no apparent reason which would lead one of ordinary skill to include spaces where Hervert et al (Fig. 3) already includes other means for maintaining turbulent flow.

Although acknowledging that the length of each of the honeycombs is not defined by the equations as set forth in the present claims, the Examiner is of the view that they are governed by the same principles such that the honeycomb structures of both Hervert et al and the present claims would be of essentially the same length. More particularly, in the Examiner's view, a catalyst that meets the velocity profile of Hervert et al will also fall within the scope of the equation of present claim 7.

The Examiner states that both the instant claims and Hervert et al are governed by the transition from turbulence to laminar flow. However, this is not correct.

Hervert et al clearly teaches that the square profile is converted to a parabolic one after a characteristic entry length for zones in which laminar flow is at normal fluid conditions (col. 5, lines 15-17). However, Hervert et al teaches that an increased overall reaction or concentration rate is achieved when a square reactant concentration profile is maintained in the reactor, *regardless of whether the dynamic condition of the flow is turbulent or laminar* (col. 5, lines 25-29). Further, Hervert et al teaches that the length of this active element should be such that a mass transfer limiting concentration gradient is just established (col. 5, lines 33-36).

It is clear that the length of Hervert et al's active element is defined by velocity profile, regardless of whether the flow is turbulent or laminar. In other words, the length of Hervert et al is governed by velocity profile, *not by the transition from turbulence to laminar flow.*

Therefore, it is not inherent for a catalyst that meets the velocity profile of Hervert et al to also fall into the equations described in the instant claims.

In view of the above, withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections, and allowance of claims 6-10 is earnestly requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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